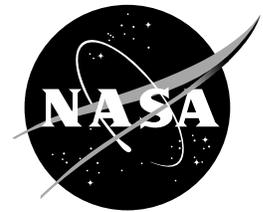


NASA Facts

National Aeronautics and
Space Administration

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‘Firsts’ and other historic accomplishments of NASA’s Marshall Space Flight Center

In the 40 years since it was created, the Marshall Space Flight Center has been responsible for creating a number of historic “firsts” as well as other landmark feats of engineering:

- Marshall provided the booster rocket that put the first American, Alan Shepard Jr., in space – the Redstone, launched in 1961. A Redstone also launched the second American, Gus Grissom, the same year.
- Marshall developed major components of, and experiments for, the first U.S. orbital laboratory – Skylab, launched in 1973. Skylab was inhabited for a total of 171 days by three different crews, who performed more than 100 varied experiments in the areas of biomedical research, solar astronomy, Earth observation and related experiments.
- Marshall developed the world’s largest operational space vehicle, the Saturn V, first launched in 1967. The Saturn V stood 363 feet (110.7 meters) tall and weighed 6.2 million pounds (2,812 metric tons). It was used in landing the first man on the Moon in 1969 as well as the next six Apollo missions. The Saturn also lifted the Skylab station into space.
- Marshall manages the propulsion system for the world’s first reusable spacecraft, the Space Shuttle, including the first reusable liquid fuel rocket engine and first reusable solid booster, which also, at 149 feet (45.4 meters) long and 700 tons (635 metric tons), is the largest solid fuel rocket.
- Marshall developed the first “sport utility vehicle” launched into space, the Lunar Roving Vehicle, used on the last three human Moon missions. It could carry two astronauts and their gear across the lunar surface for several miles from the landing site.

- Marshall built the world's first and largest at the time (1.3 million gallon or 4.9 million liters) neutral buoyancy facility in 1968 for testing space hardware by simulating weightlessness. Supporting missions from the Skylab space station to the Hubble Space Telescope, it was designated a National Historic Landmark in 1985.
- Marshall managed development of the Hubble Space Telescope, launched in 1990, first of NASA's great observatories and the largest optical telescope ever launched into space – 43 feet (13.1 meters) long, 14 feet (4.2 meters) in diameter, with a main light-collecting mirror measuring 94 inches (238.7 centimeters) in diameter. Hubble's 20-year mission is to probe the faintest and farthest reaches of the cosmos.
- Marshall managed the Chandra X-Ray Observatory program, the world's most powerful x-ray telescope, able to read a newspaper from half a mile (0.8 kilometers) away or the letters on a stop sign from 12 miles (19.3 kilometers) away. Launched in July 1999, it can see objects 20 times fainter than any previous X-ray telescope.
- Marshall managed production of the first commercial product made in space, monodisperse latex reactor beads. Made in space so they are perfectly round and identically sized, these microscopic beads are used in labs on Earth for calibrating microscopes or, when modified with radioactive elements or dyes, as tracers in humans or animals.
- Marshall developed the Tethered Satellite System, flown on two Space Shuttle missions, and the first space tether to demonstrate the ability of a conducting tether to generate power by flying through Earth's magnetic field.
- Marshall built the world's flattest floor, a surface on which test articles gliding on air bearings can simulate the movement of spacecraft in Earth orbit.
- Marshall scientists conducted the first detailed survey of the high-energy universe using the High Energy Astronomy Observatories, the first of which was launched in 1977.
- Marshall managed development of HEAO-2, the first imaging X-ray telescope and, in 1978, the largest X-ray telescope built until the Chandra X-ray Observatory.